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THE U.S.--FLAG MERCHANT FLEET--
A STRATEGIC PLANNER'S MAGNIFICENT DREAM OR WORST NIGHTMARE?

BY

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U.S. involvement in a conflict not mutually supported by allies with sealift capability will necessitate the exclusive use of US-Flag merchant vessels to deploy and support forces in a theater of operations. Unfortunately, the U.S. has a merchant fleet built for trade route profitability. The limitations of the U.S.-Flag merchant fleet for military use are of great importance to strategic mobility and for the resupply of combat forces. The shortcomings of the U.S. merchant fleet could limit the size or change the

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USAWC MILITARY STUDIES PROGRAM PAPER

THE U.S.-FLAG MERCHANT FLEET - A STRATEGIC PLANNER'S MAGNIFICENT DREAM OR WORST NIGHTMARE ?

AN INDIVIDUAL STUDY PROJECT

by

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THE U.S.-FLAG MERCHANT FLEET - A STRATEGIC PLANNER'S MAGNIFICENT DREAM OR WORST NIGHTMARE ?

CHAPTER 1

INTRODUCTION

Sun Tzu wrote his classic Art of War two and a half thousand years ago. In it he states: "The art of war is of vital importance to the state. It is a matter of life and death, a road to safety or to ruin. Hence under no circumstances can it be neglected."[1] When he wrote on maneuver he emphasized the importance of logistics. "An army without its baggage train is lost; without provisions it is lost; without bases of supply it is lost ...Move only if there is real advantage to be gained ...Let your rapidity be that of the wind, your compactness that of the forest."[2]

Following the teachings or warnings of Sun Tzu, President Reagan established as a major national security strategy, the "maintenance of global support and mobility capabilities." In his report to Congress in January 1988, he stated: "Our global support and mobility capabilities, including airlift, sealift, and prepositioning, are therefore essential to allow us to meet military challenges around the periphery of the Eurasian continent, which remains the primary locus of Soviet expansionist interests. Prepositioning ashore or at sea can sharply reduce our response times. Airlift, the quickest and most flexible of our mobility assets would deliver initial reinforcements in most contingencies, but sealift will inevitably carry the bulk of our reinforcement and resupply, as it has in past crises."[3]

Frank C. Carlucci, Secretary of Defense, in his Annual Report to Congress for FY 89 further defined President Reagan's global support and mobility capability strategy with the comment: "...active forces serving as the vanguard to our response to aggression, Reserve forces capable of mobilizing quickly and projection forces capable of rapidly transporting these forces to the location of a conflict--serve the national interest by maximizing our deterrent capability at fiscally affordable levels."[4] The Joint Chiefs of Staff in their U.S. Military Posture Statement for FY 89 state matter of factly that "in order to project U.S. military power globally, U.S. forces must maintain a high degree of mobility. The successful implementation of U.S. Strategy requires highly capable airlift, sealift and aerial refueling forces."[5] " In any major overseas deployment, sealift will deliver 95% of all dry cargo."[6] The new Republican Administration, based on Presidential campaign rhetoric, is not expected to change President Reagan's national security strategy. Therefore, if the United States has a national strategy that requires mobility, we must have appropriate mobility forces, i.e. a credible sealift capability.

United States involvement in a conflict not mutually supported by NATO or other allies with sealift capability will necessitate the exclusive use of US-Flag merchant vessels to employ and support forces in the theater of operations. Additionally, non-availability of modern fixed port facilities may require the use of Logistics-Over-The-Shore (LOTS) terminals

to sustain the tactical employment of the U.S. and local combat forces engaged ashore. The U.S. Navy's organic sealift capability, its amphibious fleet (Gator Navy), is capable of supporting only limited operations such as the one in Grenada. Therefore, for larger operations, U.S.-Flag merchant vessels must be procured by the Navy, through the Military Sealift Command (MSC) and utilized for force sustainment and tactical or nontactical employment.

"A contradiction exists between the U.S. requirements for a merchant marine to serve the twin purposes of defense and commerce. Under the American free enterprise system, the operators of privately owned ships invest large amounts of capital to build the most effective and productive types of ships for specific trades which will enable the owners to obtain a fair return on their investment."[7] Such ships, however, may not be compatible with the Armed Forces' requirements for strategic mobility and resupply. Simply stated, the U.S. has a merchant fleet built for trade route profitability that has to accommodate military operations inherent to the President's national security strategy for lack of another source of sea transport.

The military limitations of the U.S.-Flag merchant fleet are of great importance to strategic mobility and for the resupply of combat forces engaged in a logistically undeveloped overseas theater of operations. The shortcomings of the U.S. merchant fleet could limit the size or change the type of armed forces that can be deployed and supported and could require an

alteration of national security policy. It is absolutely essential, therefore, that logistics and force planners understand the merits and limitations of U.S.-Flag merchant vessels and their availability for use in military operations. The force mix that can be deployed to a "hot spot" and supported thereafter must be structured not only to meet the threat, but it must be logistically supportable and sea transportable as well. Merchant vessel availability, therefore, will, in part, determine the type of force structure used to meet any overseas threat. Hence the title of this paper: The U.S. Flag Merchant Fleet-A Strategic Planner's Magnificent Dream or Worst Nightmare?

In this paper I will discuss the sources of dry cargo merchant shipping, review each type vessel's limitations and strengths when used for military operations, and identify relative real time vessel availability. With this information, conclusions can be drawn concerning the type of combat forces that can be moved to an objective area and sustained there. Recommendations will be made concerning improvements that can be made to lessen the "delta" between the assets a planner may wish to program and that which can be accommodated.

ENDNOTES

1. Sun Tzu, Art of War, in USAWC Selected Readings, War, National Policy, and Strategy, Volume 1, Course 2, ed. by James Clavell, p. 15.

2. Ibid., p. 26.

3. President Ronald Reagan, National Security Strategy of the United States, p. 20.

4. Frank C. Carlucci, "Preserving the Common Defense," Defense 88, May-June 1988, p. 16.

5. Joint Chiefs of Staff, United States Military Posture For FY 1989, p. 3.

6. Ibid., p. 76.

7. Irwin M. Heine, The U.S. Maritime Industry: In The National Interest, p.144.

CHAPTER II

SOURCES OF MERCHANT SHIPS

Merchant ships of the Military Sealift Command (MSC) Controlled Fleet, the Ready Reserve Force, (RRF), the National Defense Reserve Fleet (NDRF), the U.S. commercial merchant fleet and the "Fleet" of Effective U.S. Controlled (EUSC) ships could be made available for support of a military operation.

The MSC Controlled Fleet is composed of assets from three sources: the Nucleus Fleet, chartered vessels and General Agency Agreement (GAA) ships. The Nucleus Fleet is made up of U.S. Naval Service ships owned by the Navy and permanently assigned to MSC for administration and operation. They are "in-service" ships manned with Civil Service Mariner crews or contract operated with union crews. MSC chartered ships are privately owned vessels of the U.S. merchant marine. They are chartered under contractual agreements such as time, voyage, consecutive voyage, or bare boat charters. GAA ships are government owned vessels in the custody of the Maritime Administration (MarAd) that have been activated from the RRF or NDRF and are operated by general agents in agreement with the U.S. Maritime Administration (MarAd) for MSC. [1]

The Ready Reserve Force (RRF) is a contingency sealift force of vessels preselected by the commander, MSC, and managed by MarAd. The Ready Reserve Force program was undertaken to meet immediate sealift shortfalls. This fleet is primarily made up of older general cargo ships, barge carriers and Roll On/Roll Off

(RO/RO) vessels no longer able to economically compete in commercial trade. This force, consisting of 93 ships of all types, is programmed to grow to 120 by 1992. These vessels are kept in a state of near readiness and can be selectively activated and assigned to the MSC fleet.[2]

The National Defense Reserve Fleet (NDRF) is a "mothball fleet" of 171 vessels of which 79 are Victory Class cargo ships. They are under the control of MarAd while in NDRF status and are located on the East, West and Gulf Coasts of the United States. Vessel activation times range from 60 to 365 days.[3]

The U.S.-Flag merchant fleet, i.e. U.S.-Flag common user vessels, can also be obtained for use in military operations. These ships may be obtained through voluntary charter, the MSC Sealift Readiness Program (SRP), or through requisitioning in accordance with the provisions of the Merchant Marine Act of 1936.

Under ideal economic conditions, commercial shipping companies would voluntarily offer ships from their fleets for lease or charter to DOD. Complete reliance on this type of availability would not be realistic, however. The more realistic manner of ship acquisition from the commercial fleet would be through the MSC SRP. "The Sealift Readiness Program is a formal agreement between U.S. Flag ocean carriers and MSC calling out the acquisition of ships and related equipment under conditions of less than full mobilization. All ships receiving construction and/or operating differential subsidy must be offered for

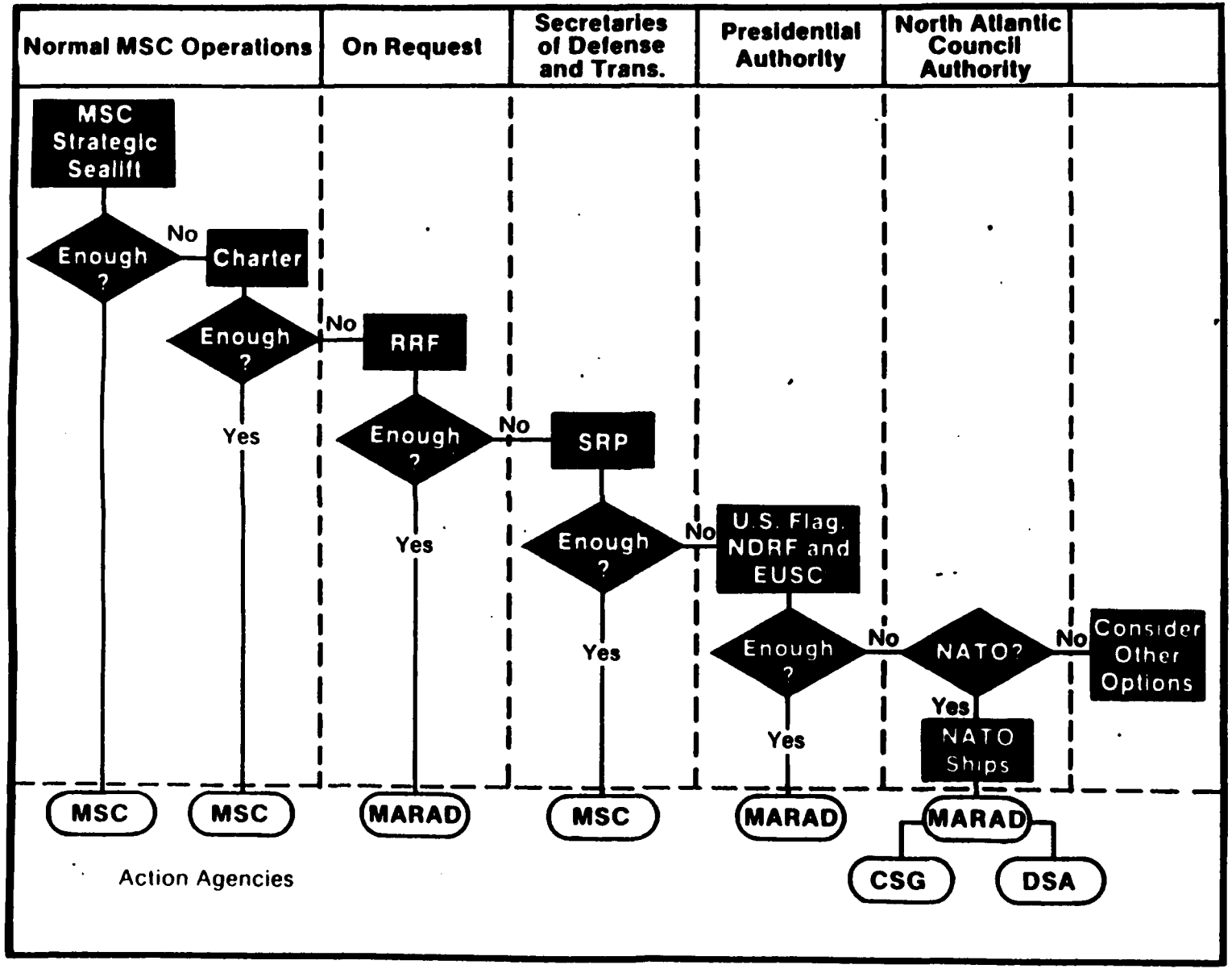
enrollment in this program. Additionally, carriers must enroll 50% of their American Flag Fleet into the program as a condition to being eligible to participate in the movement of preference cargo of the United States."[4] The SRP call-up would be based on fair distribution among all carriers participating in the program. Under national mobilization, and a presidential proclamation of national emergency, general requisitioning of all available commercial shipping assets to support the war effort would be used to provide sealift capability.[5]

A final source of sealift would be the Effective U.S. Controlled (EUSC) Fleet. Ships of this category are U.S. companies' ships flying convenience flags of the Bahamas, Honduras, Liberia and Panama. Realistically speaking, these ships would only be available in the event of a Presidential declaration of a national emergency.[6]

The normal sequence of sealift force activation is depicted in figure 2-1 on the following page. The sequence is (1) MSC strategic sealift, (2) MSC charter, (3) RRF, (4) U.S.-Flag commercial fleet SRP, (5) remaining U.S.-Flag commercial fleet and NDRF, (6) other sources.

This chapter has identified the sources of merchant ships that could be used in a military operation and how they could be obtained. Chapter IV, "Vessel Availability", will discuss types and numbers of vessels in each category and their relative ease of procurement.

NORMAL SEQUENCE OF SEALIFT FORCE ACTIVATION



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1. U.S. Department of the Navy, A Joint Navy-Marine Corps Study to Evaluate the Suitability of Merchant Ships to Augment Amphibious Ships, pp. E9-E12 (hereafter referred to as U.S. Navy-Marine Corps Study).

2. James A. Weiss, COL, Military Sealift Command Information Papers, Data, p. 3.

3. Ibid., p. 7.

4. Ibid., p. 2.

5. U.S. Department of the Navy, U.S. Navy-Marine Corps Study, p. E-16.

6. Weiss, p. 2.

CHAPTER III

VESSEL CHARACTERISTICS RELEVANT TO USE IN MILITARY OPERATIONS

For the purpose of discussion of the salient characteristics of U.S.-Flag merchant fleet dry cargo vessels available for use in military operations, I have separated the fleet into four vessel classes. Ships of each class have similar, but not exactly the same characteristics and capabilities. These vessels also vary considerably in size within each class. The classes are: breakbulk ships, container ships, barge carriers, and roll-on/roll-off (RORO) ships.

The intermodal carriers, i.e. barge carriers, ROROs and container ships, represent the newest and finest the commercial industry has to offer. They are large, fast and effective vessels designed to minimize time in cargo discharge thereby increasing a vessel's time at sea. The distinctly commercial design of most U.S. merchant ships offers advantages and disadvantages when an attempt is made to use the vessels in military operations. The following is an analysis of merits and shortcomings of each class vessel when utilized in support of military operations. When the term LOTS operation is used, it means Logistics-Over-The-Shore, i.e. the movement of cargo from ship to shore and to an inland transport mode without fixed port facilities.

BREAKBULK SHIPS. This class is made up of vessels commonly referred to as freighters and partial container ships. They are

the smallest, slowest and oldest of the four vessel classes. A typical breakbulk ship (Non-Victory Class) is 564 feet long, 76 feet wide and has a draft of 30 feet. The class includes a variety of ships of various sizes and speeds, but it basically refers to the traditional dry cargo ships that load and discharge a wide range of cargo using their own cargo handling equipment. They carry unitized cargo and odd lots such as oil drums, pallets, and tracked and wheeled vehicles. The partial container ships are breakbulk vessels that have had one or more cargo holds modified to accommodate only containers or they have been "stretched"and additional container holds have been installed. The modified or new holds have container cells just like those found in container ships. Some of the vessels can discharge their container cells with onboard cranes but most require a crane from another source because their organic cranes will not lift the weight of the individual containers or they cannot reach the new cells. Fifty-one of the 207 U.S.-Flag breakbulk ships have had container cells installed. Breakbulk vessels have dominated the U.S. and other world fleets for most of the century, however, the emergence of highly efficient intermodal type ships has greatly curtailed their continued development and construction.

Many of the characteristics of the breakbulk cargo ship that make it a versatile and profitable ship when used in trade with underdeveloped countries with primitive port facilities also make it particularly useful in military operations. The most

important single attribute of the ship is its ability to handle breakbulk cargo in the form of pallets or other similar sized containers. The ship is capable of discharging cargo; pallets, vehicles, small containers, etc. with its own gear. In this respect, it is totally self-sustaining. This class is fully capable of "in the stream" (anchored off shore) discharge using lighterage found at a LOTS type terminal. No special requirements for port clearance are necessary with this class ship. Vehicles and rail found world wide can accommodate the cargo stowed as it is in these vessels.

Overall appraisal. Extremely useful in military operations because of their excellent breakbulk cargo handling capability and the fact they are, in most cases, self-sustaining. The container cells of the partial container breakbulk ships can be used only if the ships can discharge their own containers or other sources of discharge are available. The breakbulk vessels' small size and slow speed are limiting factors to their use, however. In an environment without a container discharge capability, independent crane sources, or a RORO ramp capability, ships of this class could be essential to the sustainability of combat operations.[1]

BARGE CARRIERS: There are two types of barge carriers in the U.S. fleet. The "Lighter-Aboard-Ship" (LASH) and the Sea Barge Ship (SEABEE). The LASH is a large vessel, 820 to 893 feet long, 100 feet in breadth/beam, with a draft ranging from 35 to 41 feet. It is a vertical loader that uses a gantry crane

capable of lifting 500 long tons (LTONS). The crane picks up a barge at the vessel's stern, carries it over the deck, then lowers it into one of the ship's several holds. This type vessel can also carry lighters and containers on deck. The SEABEE, 874 feet in length and 106 feet wide, uses a different cargo handling system than that found in the LASH ship. The SEABEE uses a submersible elevator in the stern with a capability of lifting 2000 LTONS. In loading, the elevator is lowered into the water and two barges are floated over it and lifted to one of the deck levels, then loaded onto the ship horizontally. The cargo capacity of a SEABEE barge is 834 LTON/39,140 cubic feet compared to 371 LTON/19,600 cubic feet for the LASH barge. The cargo capacity for dry cargo of these vessels ranges from 37,900 measurement tons (MTONS) (C8 LASH) to 44,370 MTON (SEABEE) compared to an average 18,400 MTON capability for the average size breakbulk ship.[2]

The barge ship system is ideal for transporting military equipment. These vessels can carry nearly all the equipment in the Army inventory and they are self-sustaining. The barge carrier concept extends the advantages of containerization by providing very large floating containers that can be loaded at inland terminals and moved by tug to the port at which they are to be loaded aboard ship. They, likewise, can be off-loaded with the barest of facilities requiring only a warping tug to move the barges once they are in the water, and a light capacity crane on a pier or causeway to discharge the barge. Note, a heavier crane

will be required if the barges contain armored vehicles, containers or other heavy lifts. These ships are fully self unloading but they require warping tugs to remove the discharged barges from the water surface at the stern of the ship so succeeding barges can be discharged. One of their greatest advantages, however, is the ability of these vessels to carry a package consisting of warping tugs, causeways, cranes, mooring gear and other equipment required to establish a complete barge handling, discharge and offshore storage facility.

The barge carriers do have a few shortcomings. Shore cranes are required to discharge the barges. The number of these barges is limited so they will have to be discharged rapidly so they can be transported to the supply source by the "mother ships". The barge discharge system is sensitive to extreme sea states. Operations would have to cease with 6 to 8 foot swells or sea state 3.

Overall appraisal. Extremely useful in military operations using fixed port or LOTS terminals. They can be one of the first vessels in due to their ability to deploy a complete discharge system. Fast barge discharge (estimated SEABEE 13 hours, LASH 20 hours) also reduces time in a vulnerable anchorage and the large capacity of these vessels means a great deal of cargo in each visit.[3] Some risk is attendant in all this, however, with the unique stern elevator (SEABEE) and gantry (LASH) crane systems which are the only way to remove a significant share of the ship's cargo. Additionally, the discharge operation is highly

sea state sensitive.[4] The theater of operations inland transportation and terminal clearance capabilities can easily be accommodated by the barge carriers as cargo can be packaged in their barges at POE to fit the limitations of the destination's transportation system.

ROLL ON/ROLL OFF (RORO) SHIPS. The RORO ship is specifically designed for vehicular cargo to be driven or towed on and off the ship by way of stern or side ramps. Internal ramps are used to move vehicles between decks. The ramp system fosters rapid loading and unloading of vehicles.[5] The RORO has the added capability to load prepacked cargo in containers that can be placed on chassis for transit or loaded on chassis by forklifts or container handlers in the vessel at destination.[6] The typical RORO is 700 feet long, 92 feet wide, has a draft of 28 feet and has no booms to discharge rolling stock or containers.[7] The Navy bought and converted eight large SL-7 container ships into high speed ROROs. These fast sealift ships (FSS) can carry an entire mechanized division to include assembled aircraft at sustained speeds of thirty knots. Unlike most RORO ships, these vessels have large "Hagland" cranes capable of discharging cargo over the side as well as through bow and stern ramps. They are extremely well suited for military cargo operations as they were modified specifically for that purpose.[8]

With the exception of the FSS vessels, the ROROs were designed for a specialized commercial market with fixed pier facilities. They rely almost entirely on their ramps for loading

and discharge. Although these vessels have the tremendous capability to transport all equipment of the armored or mechanized division, all vehicle discharge not performed at a heavy commercial pier must be accomplished on to floating causeways or landing craft which means that support for the end of the ramp carrying loads of 60+ tons is far from stable. Additionally, the ramp-causeway marriage is highly sea state sensitive.[9]

Overall appraisal: The RORO is an outstanding vessel for transport of military cargo if shore facilities are available. Equipment is stowed and discharged in a ready to use configuration. Loads can be configured to accommodate inland and port clearance facilities in the military operation's host country. Additionally, with the proper facilities, these vessels can be discharged in 24 to 36 hours enabling them to exit a vulnerable area and return to the U.S. for more cargo. Most ROROs are relatively new and fast vessels, therefore more trips can be made with these ships than can be made with the slower vessels. This speed facilitates rapid initial force deployment as well. Although these vessels can be discharged "in the stream" they are extremely sea state sensitive and as such their utility is diminished when they are discharged in this manner.

CONTAINER SHIPS. To achieve economies of scale and the efficiency necessary to remain competitive with foreign operators, U.S. operators have almost universally replaced their breakbulk carriers with a more modern and economical fleet of

container ships. Most of these are large vessels with no cargo-handling equipment (non-self-sustaining (NSS) ships) and are therefore dependent on outside means for the loading and unloading of their cargo.[10] The container ships are mostly large and fast. Many of these vessels exceed 950 feet in length, 100 feet in breadth and have a draft of over 35 feet.[11] They obviously require modern port facilities to be "worked" efficiently, although tests have been run using the Navy's newly converted crane ships (TACS) that have proven discharge is possible at a reduced rate "in the stream".

The average capacity of NSS container ships of the U.S.-Flag merchant fleet during 1987 was approximately 2000 TEUs (TEU-twenty foot equivalent unit). The largest vessels currently in service carry 3400 TEUs, but American President Lines recently christened two new ships that will carry over 4000 TEUs. Note, the new vessels have a draft of 41 feet and their overall dimensions exceed the capability of the Panama Canal locks. The trend toward larger container ships is expected to continue as ocean transport companies continue their quest for increased productivity and greater economy of scale.[12]

Cargo containers are most often found in 20 and 40 foot lengths, although other sizes (45, 48 foot) are becoming more common.[13] It is significant that 80% of DOD cargo is now moved in containers, which offer advantages even for wartime delivery in terms of rapid delivery, reduced handling costs, and reduced damage and pilferage. Resupply accounts for the better part of

the tonnage that must be delivered in support of military operations. Considering Army equipment tonnage, less than 40% of the equipment can be placed in standard containers. However, when flatracks (opensided containers) are used the percent grows to 65%[14] and exceeds 90% of all divisional equipment when SEASHEDs are installed.[15] The SEASHED is a large open top container 40 feet long, 25 feet wide and 12 feet 6 inches high with a work through floor having a true weight of 33 short tons and a cargo capacity of 115 tons. It is designed for unloaded insertion into a container hold having at least three adjacent cells. Once installed, cargo that would not fit in a container can be placed in the SEASHED and containers or other SEASHEDS can be loaded on the next level in the container hold. The work through floor allows placement of multiple SEASHEDS into container holds prior to the loading of the vessel. Current inventory of SEASHEDS and flatracks as of 1 June 1988 was 512 and 358 respectively. The current OSD objective is for 1000 SEASHEDS and 3,500 flatracks.[16]

Overall appraisal: Extremely useful providing container off-load and transfer systems are present in the area of operations. If these systems are available for commercial use, inland transport systems will be able to accommodate the containerized cargo. Army transport assets are capable of transporting 20 and 40 foot containers and flatracks if their weight doesn't exceed the rated trailer capacity. If no container discharge systems are available in the theater of

operations, the use of the container ship and much of the U.S.-Flag commercial fleet is questionable.

In summary, the unique characteristics of each type of vessel determine what type of cargo can be loaded on each and what support equipment and facilities must be available in the area of operations to ensure discharge of the vessel. Several factors must be considered prior to vessel selection for military operations and these cannot be considered in isolation, they must of necessity, be considered together. The level of war fighting, i.e. the threat, has to be identified as speed of discharge could be the important element. The sophistication of port facilities must be thoroughly examined to ensure selected vessels can be discharged when they arrive in theater. Equipment required in the theater is tied directly to the level of war fighting and the nature of the threat but the equipment has to be placed on the type vessel that can accommodate the equipment. The effects of weather must be considered as well, as unprotected anchorages are much more susceptible to sea-state work stoppage than are modern protected port facilities. The war planner has to understand all the advantages and limitations of each type vessel and the theater of operations reception capability tempered by the threat to select the right vessels for optimum support to the theater. Regardless of the situation, it is important to remember that all US-Flag vessels are not alike and vessel characteristics will be a determining factor in the type of force that can be placed ashore and sustained there.

ENDNOTES

1. U.S. Department of the Navy, A Joint Navy-Marine Corps Study to Evaluate the Suitability of Merchant Ships to Augment Amphibious Ships, pp. E3, IV24-IV34 (hereafter referred to as U.S. Navy-Marine Corps Study).

2. U.S. Army War College, Department of Military Strategy, Planning and Operations and Department of Corresponding Studies, Military Sealift, pp. 15-17.

3. Ibid. p. 16.

4. U.S. Navy-Marine Corps Study, pp. IV46-IV66.

5. Military Sealift, p. 18.

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7. Military Sealift, p. 18.

8. Vice Admiral Stanley R. Arthur, Statement of the Deputy Chief of Naval Operations Before the Subcommittee On Projection Forces and Regional Defense of the Senate Armed Services Committee On Fast Sealift, p. 4.

9. U.S. Navy-Marine Corps Study, pp. E5, IV35-IV39.

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11. Military Sealift Command, Ship Register, MSC-P504, pp. 12-27.

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15. Military Traffic Management Command, Transportation Engineering Agency, Analysis on Containerization of Unit Equipment in Strategic Deployment, pp. 1-15.

16. Military Sealift Command, Background Material-Sealift Enhancement Features Program SEASHEDS, Flatracks And CCSA, pp. 1-8.

CHAPTER IV

VESSEL AVAILABILITY

The United States emerged from World War II with a fleet of 4500 ships suitable for commercial use, more than all other nations combined.[1] By 1980, the fleet had declined to 843 active ships[2] and today we have only 343.[3] The figures include tankers but indicate the vast reduction in numbers that has taken place the past 40 plus years.

Over the past two decades, the make-up of the U.S. dry cargo merchant fleet has changed as well. Intermodal ships (container, roll-on/roll-off and barge carrier vessels) were introduced, replacing self-sustaining breakbulk ships. Large nonself-sustaining container ships now comprise the bulk of the dry cargo commercial fleet capability. Roll-on/roll-off ships are marginally competitive, and their numbers are decreasing. Barge ships, which entered the commercial fleet in the early 1970s, are also marginally competitive and can be expected to decrease in numbers as unprofitable routes are dropped. In general, this changing composition has resulted in a declining number of militarily useful dry cargo ships in the commercial fleet necessitating heavy reliance on other tenuous sources, i.e. the RRF, NDRF or EUSC Fleets.[4]

Total U.S.-Flag dry cargo merchant vessel availability as of September 1988, by fleet source, is depicted in Figure 4-1.

Figure 4-1

VESSEL TYPE

SOURCE	*BREAK BULK	BARGE CARRIER	**ROLL-ON ROLL-OFF	***CONTAINER VESSEL
MSC	10	5	18	0
RRF	48	7	18	6
COMMERCIAL	27	6	23	91
NDRF	122	2	2	5
TOTAL	207	20	61	102 [5]

*Partial container and semi-submersible ships included
**18 MSC vessels includes 2 combination container/RORO ships
18 RRF vessels includes 1 combination container/RORO ship
23 Commercial Fleet vessels includes 4 car carriers and 5 combination container/RORO vessels
***6 RRF self-sustaining container ships are Auxiliary Crane Ships that provide a mobile discharge facility for nonself-sustaining container ships in ports without operational container discharge capability. Six are in service now, 6 more have been funded (due in service in 1991). These are converted ships of the breakbulk or self-sustaining container class of vessels.[6]
91 Commercial Fleet vessels include 1 self-sustaining ship and combination container/car carrier. The rest are nonself-sustaining container ships.
5 NDRF vessels are self-sustaining container ships.

Three hundred and ninety ships represent a substantial sealift capability but this capability has to be viewed in the military perspective for operational use. The U.S. Army Military Traffic Management Command (MTMC) estimates that 22 to 26 vessels (Large intermodal carriers) would be required to deploy the Army's mechanized and armored divisions respectively. The 101st would require 10+ ships, the 82nd 7+ ships and the light division requires 5+ vessels if moved by ship in an aircraft constrained environment. A 5 division mix of 1 Mechanized/ 1 Armored/ 1 Air

Assault/ 1 Airborne/ and 1 Light Infantry Division would require approximately 71 vessels. The required Corps support slice and immediate resupply requirements must by added to this force as well raising the total to well over 75 ships for the initial one time lift requirement.[7] These estimates, unfortunately, assume that modern port facilities would be available to discharge the cargo and that new large intermodal vessels would be available immediately. While it is not the intent of this paper to analyze the total number of ships required for the movement of specific combat forces, these statistics are presented to place vessel requirements in proper perspective. Bottom Line: It takes considerable sealift to move even a small force.

Before conclusions can be drawn by simply matching force lift requirements to Chapter III's relevant vessel characteristics and this chapter's vessel availability, several important facts must be highlighted that will modify a straight, numbers only, analysis.

Not included in the number of ships available for contingency operations noted earlier in this chapter, are 25 afloat pre-positioned assets. Afloat pre-positioning allows the rapid movement of equipment and supplies from one region to another as circumstances dictate. The Afloat Pre-positioning Force contains two elements: the Maritime Pre-positioning Ships (MPS) Program and the Pre-positioning (PREPO) Ships Program (formerly Near-term Pre-positioning Force (NTPF)). The MPS program combines the responsiveness of airlifted marines with

sealift delivery of pre-positioned equipment aboard merchant vessels. The 13 vessels in the program are organized into three MPS squadrons. The ships carry equipment and 30 days of supply for three Marine Expeditionary Brigades. The squadrons are deployed to the Atlantic, Diego Garcia and the Guam-Tinian area. The 12 PREPO ships (8 dry cargo ships and 4 tankers) are in the Mediterranean Sea and Indian Ocean. They carry equipment and supplies for the Army, Navy and Air Force.[8] All the pre-positioned ships are self-sustaining. These vessels should be considered fast sealift in the sense they are close to the scene of possible action and will be able to respond much quicker than ships that would have to load out and transit from the United States.[9]

The MSC Controlled Fleet is immediately available for use unless otherwise committed and the vessels are modern and efficient. Eight of the ROROs are large converted SL-7 Class container ships that together, can carry an entire mechanized division at sustained speeds of thirty knots. These fast sealift ships are partially manned and maintained in reduced operating status capable of getting underway from their layberths within ninety-six hours of notification.[10]

The Ready Reserve Force is maintained in a high state of readiness so that it can be quickly activated. Of the 91 ships (includes 6 tankers) in the fleet, 64 are assigned a 5 day readiness status, 26 a 10 day status and 1 is in a 20 day alert status. To test readiness, RRF ships are periodically test

activated on both a notice and no-notice basis to ensure they are able to meet their readiness criteria. Most often they are activated in conjunction with an exercise where they are employed as an integral part of the exercise. Unfortunately, only 77 of the 91 RRF vessels meet their assigned readiness criteria, 55 in the 5 day category, 21 in the 10 day category, and the one in the 20 day category. These numbers vary in time, however, with cyclic maintenance requirements and the funds provided for the maintenance required to bring the ships to the assigned readiness standards and to maintain them there. MarAd has been funded to bring these vessels up to standard and to procure additional vessels so the fleet is expected to reach 120 in number by 1992.[11]

The large size of the NDRF is deceptive because its usefulness for military operations is limited. Activation times for vessels in this fleet range from 60 to 365 days. Additionally, 79 of the 131 general purpose cargo ships are World War II vintage "Victory" ships that are 40 years old or older.[12] These ships will require extensive repair prior to their effective use and due to the time required for activation, they could only be used for a lengthy sustainment phase of operations. Senator Jeremaiah Denton's " First Report of the Commission on Merchant Marine and Defense" stated in October 1987 that due to the depressed condition of the ship building and repair industries, the surge phase requirements of mobilization could be met but the "sustaining phase would be constrained by inadequate

shipyard facilities, manpower and material supplier capacity in both 1987 and 2000."[13] This comment places any planned use of the Victory Ships within a year of activation as questionable at best.

The privately owned commercial fleet consists of 147 dry cargo ships. Most are new and efficient but designed for specialized trade routes. The fleet is heavily engaged in the extremely competitive container traffic market with 91 container ships and 21 of the 27 breakbulk ships modified with container holds and classified as partial container ships. Eighty-eight of the 147 ships are in the SRP. It must be emphasized here that with the exception of the ROROs and barge carriers, this is a predominately container fleet. Use of these vessels would take them from highly competitive and lucrative trade routes. As such, their operators no doubt would resist their use in military operations other than declared national emergencies.[14]

The EUSC fleet offers a limited number of vessels for a contingency operation. There are 127 vessels presently in the fleet, but only 19 are dry cargo ships.[15]

It is important to note another major factor that impacts on vessel availability for any contingency operation; availability of trained seamen. The Commission on Merchant Marine and Defense in their first report in October 1987 stated; "A minimum of 19,000 trained seamen would be needed to crew the ships required today and in the year 2000 to move the cargo during the surge phase of a hypothetical Southwest Asia conflict. Over 7,000

additional personnel would be needed to man the ships used to fulfill the economic support requirement".."The active United States Merchant Marine seaman work force can no longer provide the critical skills necessary to mobilize the current U.S.-Flag commercial fleet, (including MSC charters), the Ready Reserve Force, and the Military Sealift Command's Reduced Operating Status ships during time of national emergency or war."[16] Our seaman population is aging (50+ years average) and many of them are trained in steam propulsion plants, but most new ships are diesel powered. Even calling those into service who are available would probably not produce the skills necessary to man the vessels required. A ship cannot be planned for use if it cannot be manned. This manning problem may turn out to be the most serious limiting factor in a planner's determination of available sealift assets notwithstanding the numbers previously reported.

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6. U.S. Department of the Navy, Office of Information, Navy Fact File, p. III-40.

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9. Vice Admiral Stanly R. Arthur, Statement of the Deputy Chief of Naval Operations Before the Subcommittee On Projection Forces and Regional Defense of the Senate Armed Services Committee On Fast Sealift, p. 4.

10. Ibid., p. 4.

11. Col. James A. Weiss, Military Sealift Command Information Papers, Data, pp. 1-9.

12. Ibid., p. 7.

13. Commission on Merchant Marine and Defense, First Report Of The Commission On Merchant Marine and Defense, 19 October 1987, pp. 7-8.

14. U.S. Army War College, Department of Military Strategy, Planning and Operations and Department of Corresponding Studies, Military Sealift, pp. 8-9.

15. Weiss, p. 1.

16. Commission on Merchant Maring and Defense, pp. 4-5.

CHAPTER V

CONCLUSIONS/RECOMMENDATIONS

I have discussed the sources of merchant shipping, each type of vessel's limitations and strengths when used for military operations and have identified relative real time vessel availability. The conclusions that can be drawn from the discussion approach an answer to the question: "Is the U.S.-Flag merchant fleet a strategic mobility planner's magnificent dream or worst nightmare?" and serve as a guide for realistic mobility planning. However, in the final analysis, the answer will always be a value judgment based on what the planner's actual requirements are and what lift is made available.

Conclusions. Review of the merits and shortcomings of the four types of U.S.-Flag vessels that could be used in a contingency operation encourages a two-tiered rank ordering process. One that assumes modern port facilities are available and one that does not.

If modern port facilities are available, (i.e. those that include container cranes, general purpose cranes, RORO ramps, and some cargo marshalling area) the new large intermodal carriers are our best assets with the RORO the most desirable ship. The RORO vessels can be discharged quickly and all equipment stowed in a ready for use or issue configuration. Less time in port means more trips, more cargo moved and less vessel vulnerability to hostile action. The large size of the RORO's (8 FSS RORO's lift an entire mechanized division) facilitates the movement of

entire unit equipment sets. These sets become operational units when soldiers are married to the equipment soon after its arrival in theater. The barge carriers are more desirable than the container ships in that they can be used to transport nearly all types of military equipment, even assets needed to assist in port operations,i.e. tugs, causeways, etc. Also, as their barges can be discharged rapidly, they too can depart for another trip while more time is taken to unload each barge. The barges offer the added opportunity to move cargo to inland waterway terminals closer to using units saving less economical and usually scarce land transportation assets. The barge carriers, like the ROROs, are very large as well. Actually, a mix of ROROs and barge carriers would be best for the initial stages of an operation. Ranking third among the intermodals would be the container ships. They are large, the greatest in number, and can be discharged very rapidly by a modern port's shore container cranes. Sixty-five percent of the Army's equipment can be loaded on flatracks or in containers and placed in standard container cells in the container ship with no modification required. If SEASHEDs are installed, over 90 percent of the Army's equipment can be loaded on the standard container ship. Note, container ships require container hold modification to accommodate the SEASHED, but not the flatrack. Last in the hierarchy for desirable use when modern ports are available are the breakbulk ships. They discharge their breakbulk cargo with their organic cranes and the containers they may carry are easily discharged by the shore

container cranes. These vessels can accommodate flatracks in their modified container cells as well as container ships. Keep in mind that although the breakbulk vessels are, for the most part, self-sustaining, they are much smaller than the new intermodal carriers and require a significantly longer time to discharge their cargo.

If modern port facilities are not available, the rank order of vessels has to be changed as the ships must be discharged "in the stream" in a Logistics-Over-The-Shore (LOTS) operation or at small piers with little lift capacity and limited water depth. In a LOTS or primitive port operation, the barge carriers become the prime asset as they carry all that is needed to establish the terminal, to include lighterage, warping tugs and smaller cranes. Either an auxiliary crane ship or a shore crane, if its capacity were sufficient, could discharge the barges at the beach, small pier, or "in the stream". Next, the breakbulk vessels would be desirable in this case because of their self discharge capability. Note that without booms over their container hatches (cells), a crane ship would be needed to discharge the container cells or they would have to be free of cargo. Third, the ROROs could be used. The Army and Navy have perfected methods to unload these vessels "in the stream" using specialized lighterage (landing craft) and causeway systems, but this type discharge is sea state sensitive and very time consuming. Additionally, this method of discharge requires extensive training for the terminal service units performing this unique activity. Last in order is

the container vessel that can only be discharged by the crane ship, with each container lifted slowly onto available lighterage for transport to shore then lifted by container handlers (large forklifts) from these small boats onto 40 foot trailers and cleared from the beach. This is an extremely sophisticated procedure and it requires extensive training by all who take part in the operation. It is quite sea state sensitive as well. Although the breakbulk ships rank ahead of the ROROs and container vessels, the latter are much larger, faster and carry much more cargo. It is obvious at this point that the 12 RRF Crane Ships (6 in service, 4 conversions funded, 2 planned for 1991) are necessary to facilitate the use of container carrying ships at unimproved terminals.

If the U.S.-Flag dry cargo merchant fleet had an infinite number of assets and all were equally available, the mobility planner's task would be simple. First, determine what kind of port facilities are available, then plan for the use of the necessary vessels. It is not that simple, however, as the fleet is small and the vessels in greatest demand are in shortest supply. First of all, the NDRF is of little value if movement has to be made in less than 60 days. That leaves the planner with 259 ships and 97 (37%) of these are container ships with their inherent disadvantages when used in under less than optimum conditions described above. Additionally, the favored vessel, the RORO, is in relatively short supply: 59 vessels if all could be made available at once where they were needed. This is highly

unlikely considering the diversity of POEs required to load out units on the West, East and Gulf coasts. The barge carriers are in very short supply as well, just 18 available, and the breakbulk ships are only 85 in number without the NDRF. This number is misleading as they are much smaller and older than the larger intermodal carriers and have considerably less cargo carrying capacity. The difficulty in requisitioning U.S. vessels from their liner trade unless it is a true emergency looms as an impediment to marshalling assets in a timely manner as well. The container ships will only carry 40 percent of the Army's cargo without flatracks, 65 percent with and 91 percent with SEASHEDs. Therefore, flatracks and SEASHEDs must be available at the right POEs and the container ships modified for SEASHED accommodation prior to desired use. Last, but not least, the required vessels must be near desired POEs for rapid load out during the early stages of an operation.

Recall the Chapter IV example deployment lift data: 75 ships required for a one corps, five division force deployment. The U.S.-Flag fleet, less the NDRF, is only 259 ships. It is hard to imagine being able to assemble nearly 30 percent of the entire fleet at the right places at the right times for a one time lift when 147 of the vessels are actively engaged in commercial trade. The problem is further aggravated by the lack of mariners to crew the RRF assets as reported by the Commission on Merchant Marine and Defense. This simple numbers game quickly illustrates why the Commission has concluded; "There is today

insufficient strategic sealift for the United States, using only its own resources, to execute a major deployment in a contingency operation in a single distant theater."[1] This, unfortunately, is the bottom line for the strategic mobility planner.

The operational use of a small number of highly specialized ships whose availability varies requires precise planning and compromise by "war fighters" and logisticians alike. In this respect, the U.S. Fleet in support of a major deployment is a nightmare. However, if less than a major deployment is required, there are some magnificent assets available. The 8 Fast Sealift Ships augmented with RRF RORDs, barge carriers and the limited number of breakbulk ships that can be crewed do provide fast and efficient lift when augmented by prepositioned vessels, the MSC Controlled Fleet, organic Navy supply ships and available commercial assets and prepositioned stocks. If the requirement is not too large and the POD port facilities are adequate, the fleet is a magnificent dream.

Because of our limited resources, mobility planners must not assume sealift, they must plan for it. Requirements must be matched to vessel types, availability, and discharge facilities. Precise planning is required to ascertain if the desired force structure can be lifted by available assets. At this point precise calculation is required using available computer assisted mobility models. The force structure may have to be changed if our mobility assets are not sufficient in number and desired type.

As a nation, we see ourselves as a maritime country whose international commerce has become our lifeline. Our leadership has pledged global military support to our allies though mobile and predeployed forces. We have identified the ends and ways to execute this strategy, but we have not provided the means, i.e. adequate sealift. We have allowed our nation's merchant fleet to deteriorate and now the realistic planner has to plan to fight what he can get to the battle, not plan to move what he wants to fight in the battle. It is therefore essential that all force planners (war fighters) become intimately knowledgeable of our limited strategic mobility sealift capability as our national strategy continues to be dominated by pledged support to our global allies.

Recommendations. Informing the mobility planner that he/she must organize forces to match our deteriorating sealift capability is an obvious and necessary recommendation of this study as, if movement is required in the near term, that is exactly what they will have to do, tailor forces to lift. More has to be done at the national level, however, to relieve the planner of this constraint. If the Bush Administration adopts the Reagan Administration's national policy goal of "maintenance of global support and mobility capabilities" many things have to done to improve our obvious sealift shortfall.

First and foremost, steps must be taken to revitalize the United States maritime industry. The shipping industry must be made more profitable to U.S. companies thus encouraging them to

buy and operate more ships. Attendant to this is the necessary revitalization of the ship construction and repair industry as well. This will require subsidies, mandatory U.S. vessel drayage requirements and possibly a slight increase in imported goods prices, but it has to be done. A robust and active private U.S.-Flag merchant marine industry is the essential ingredient in improving our strategic sealift capability since it provides the ships and the sailors for most of our operational deployments. A healthy merchant marine industry would signal our return as a major maritime nation among world traders. This is a long term and expensive solution to the strategic sealift problem, in terms of resources and political dedication, but it has to be done and we must begin the process before our fleet deteriorates further.

The second major step that has to be taken is the purchase of SEASHEDs and flatracks in sufficient numbers to guarantee maximum use of the largest and most modern vessels of our merchant fleet, the container ships. This is a small investment to ensure that 91 percent of the Army's cargo can fit on the most readily available vessels.

Until the merchant fleet can be built up, the Department of Transportation (MarAd), in coordination with the U.S. Navy, must continue to purchase modern merchant vessels that are not cost effective to commercial carriers but have military utility, and place them in the RRF. If civilian mariners are not available, naval reservists must be trained to operate these vessels in wartime.

Another, but much more costly option is the building of vessels for MSC or MarAd that would be used strictly for strategic mobility. These vessels would resemble the Fast Sealift Ships or possibly a new type, called the Surface Effect Fast Sealift Ship, and would be specifically designed for military cargo and rapid movement to an overseas operational area.

There are three elements of mobility: sealift, airlift and prepositioning. Building airlift to replace sealift is cost prohibitive. Prepositioning in some global areas is an appropriate option to reduce sealift requirements. The POMCUS stocks in Europe are an example of this option. It, however, is quite difficult to determine where the next war will begin so prepositioning has limited utility at best and in many areas of potential hostilities, host nation support cannot be assured.

In some contingencies, vessels of our coalition allies could be used, but these assets are limited to specific scenarios. A NATO or Korean contingency serves as an example where coalition vessels could be expected to be used. Treaties and contracts are required to ensure these assets are available when needed. These are politically sensitive issues and they could be costly if peacetime contracts are involved. Our allies are sovereign states with political and economic problems of their own and their container ships need SEASHEDs just like ours do.

The Navy's Crane Ships and the Army's vessel discharge units and assets provide the interface between the intermodals and

unimproved ports. These assets must be properly placed for rapid loadout and use and the personnel who are to operate these complex systems must be trained. Discharge of a modern intermodal carrier in any terminal is not an endeavor for the untrained.

A review of the options quickly draws us to the best, least expensive and most palatable options; revitalize the merchant marine, buy and install assets that make the private fleet militarily useful and train our soldiers and sailors to "work" the intermodals. The others are merely short term, stop gap measures.

The new administration has to solve the strategic mobility problem in the current resource constrained environment or change our national strategy. If we are to continue as a global power, we must have sealift capable of projecting all the power that is necessary to effectively support our allies. A strong merchant marine would enhance this country politically, militarily, and economically in the long run. In the near term it is essential that military planners understand the dilemma and support the logisticians in their efforts to accommodate this serious shortfall. The rebirth of our merchant marine will take time and resources and it will make strange political bedfellows, but it has to be done <u>now</u>. Until we are able to accomplish this economic miracle, the mobility planner must know what he/she has to work with, give wise counsel to the operational planners, and

create the "noise" that gets important things done in a Democracy.

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